



(11) **EP 2 269 404 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
07.09.2011 Bulletin 2011/36

(21) Application number: **08843664.7**

(22) Date of filing: **06.10.2008**

(51) Int Cl.:
H04W 36/20 (2009.01)

(86) International application number:
PCT/SE2008/051130

(87) International publication number:
WO 2009/058074 (07.05.2009 Gazette 2009/19)

(54) **INTER-CELL UPLINK POWER CONTROL METHOD AND ARRANGEMENT IN A
TELECOMMUNICATION SYSTEM**

VERFAHREN UND ANORDNUNG IN EINEM TELEKOMMUNIKATIONSSYSTEM ZUR STEUERUNG
DER LEISTUNG ZWISCHEN ZELLEN EINER AUFWÄRTSVERBINDUNG

PROCEDE ET DISPOSITIF DANS UN SYSTEME DE TELECOMMUNICATION DE COMMANDE DE
PUISSANCE ENTRE CELLULES SUR UNE LIAISON MONTANTE

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT
RO SE SI SK TR**

(30) Priority: **02.11.2007 US 985027 P**

(43) Date of publication of application:
05.01.2011 Bulletin 2011/01

(73) Proprietor: **Telefonaktiebolaget LM Ericsson
(publ)
164 83 Stockholm (SE)**

(72) Inventors:
• **SIMONSSON, Arne
S-954 33 Gammelstad (SE)**
• **FURUSKÄR, Anders
S-113 44 Stockholm (SE)**

• **MÜLLER, Walter
S-194 62 Upplands-väsby (SE)**

(74) Representative: **Kühn, Friedrich Heinrich
Ericsson AB
Patent Unit LTE
Torshamnsgatan 23
164 80 Stockholm (SE)**

(56) References cited:
EP-A- 1 755 236 US-A1- 2005 043 051

• **SHARP: "Uplink Inter-cell Interference
Management for LTE" 3GPP DRAFT; R1-072051,
3RD GENERATION PARTNERSHIP PROJECT
(3GPP), MOBILE COMPETENCE CENTRE ; 650,
ROUTE DES LUCIOLES ; F-06921 SOPHIA-
ANTIPOLIS CEDEX ; FRANCE, vol. RAN WG1, no.
Kobe, Japan; 20070507, 2 May 2007 (2007-05-02),
XP050105805**

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 2 269 404 B1

Description

[0001] The present invention relates to methods and arrangements in a telecommunication system, in particular to methods and arrangements for power control with regard to certain control messages in user equipments and/or radio base stations.

BACKGROUND

[0002] Setting output power levels of transmitters, base stations in downlink and mobile stations in uplink in mobile communication systems is commonly referred to as power control (PC). Objectives of power control include improved capacity, coverage, user quality (bit rate or voice quality), and reduced power consumption.

[0003] Power control can be divided into different aspects:

- intra-cell power control, taking into account information from and the relation to the serving cell only; and
- inter-cell power control, taking into account the relation to and information from neighbour cells, in addition to intra-cell power control.

[0004] Figure 1 illustrates a problem that arises in cellular mobile communications systems, whereby mobile terminals associated with one cell interfere with communications of another cell.

[0005] Thus, Figure 1 shows a first mobile terminal (also known as a user equipment) 2 which belongs to a first cell (not illustrated) maintained by a radio base station 4. Data and control signals are transmitted from the radio base station 4 to the mobile terminal 2 in the downlink, and in the reverse direction in the uplink. Signals transmitted from the mobile terminal 2 in the uplink have a signal power of S_1 . A similar arrangement exists in a nearby, possibly neighbouring, cell, where a second mobile terminal 6 communicates with another radio base station 8. Signals transmitted from this mobile terminal 6 in the uplink have a signal power of S_2 .

[0006] Particularly when the first mobile terminal 2 is near the edge of its cell, convention dictates that its transmitting power is set high, to ensure that the transmitted signal can be received correctly by the associated radio base station 4. However, in these circumstances, transmissions from the first mobile terminal 2 may interfere with communications in the nearby cell. Thus, a signal 1 causes interference in communications between the second mobile terminal 6 and its associated base station 8.

[0007] A communication path 10 exists between the two radio base stations 4, 8. In some telecommunications systems, this is a direct interface (for example, in evolved UTRAN, known as the X2 interface); in other systems, the communication path may be indirect, requiring communication via a core network.

[0008] There are several suggestions for providing inter-cell uplink power control, which will put constraints on

the power usage and reduce the serving cell desired power (the intra-cell power control). The main suggestions relate to use of an overload indicator (OI), where a nearby cell that is receiving interference can inform the cell that is causing the interference of this fact.

[0009] For example, in evolved UTRAN (E-UTRAN), the radio base station experiencing interference sends an OI over the X2 interface to the relevant radio base station. This radio base station can then control the interfering mobile terminal accordingly. In WCDMA, the radio base station experiencing interference sends a relative grant directly to the mobile terminal that is causing the interference (even though it is sending data to a different cell).

[0010] An obvious response to receipt of an OI is to reduce or limit the transmission power of the mobile terminal. In this way, interference with nearby cells may be reduced. However, the system response to receipt of an OI has not yet been standardized in LTE. In WCDMA, the mobile is specified to reduce the transport format and power according to the relative grant from the neighbour cell.

[0011] See US-A-2005/043051 (Takano et al.).

SUMMARY OF INVENTION

[0012] According to a first embodiment of the present invention, there is provided a user equipment for a telecommunications system, the telecommunications system comprising at least a first radio basestation. The user equipment comprises means for controlling a transmission power of the user equipment, such that said transmission power has a first value for a first set of one or more signals sent over a physical channel between the user equipment and the first radio basestation, and a second value for a second set of one or more signals sent over the physical channel between the user equipment and the first radio basestation. The first value and said second value are different.

[0013] According to a second embodiment of the present invention, there is provided a user equipment for a telecommunications system, the telecommunications system comprising at least a first radio basestation and a second radio basestation. The user equipment comprises: means for receiving an indication that one or more signals from the user equipment are interfering with the second radio basestation; a first transmission control mechanism, for a first set of one or more signals between the user equipment and the first radio basestation, disregarding said indication; and a second transmission control mechanism, for a second set of one or more signals between the user equipment and the first radio basestation, taking into account said indication.

[0014] Thus, the present invention provides user equipment that transmits signals differently according to the type of signal being transmitted. For example, signals related to handover or similar may be transmitted taking into account power control information from the serving

cell only, or otherwise be transmitted at a higher power than other types of signals. In this way, when it is important for radio network efficiency that a signal be correctly received by a radio base station of the serving cell, the signals are transmitted regardless of any temporary interfering effect they may have on nearby or neighbouring cells.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] For a better understanding of the present invention, and to show more clearly how it may be carried into effect, reference will now be made, by way of example, to the following drawings, in which:

Figure 1 is a schematic illustration of the problem of interference in a cellular telecommunications system;

Figure 2 is a schematic illustration of a mobile terminal according to the present invention; and

Figure 3 is a flowchart of a method according to the present invention.

DETAILED DESCRIPTION

[0016] Figure 2 is a schematic illustration of a mobile terminal (user equipment) 20 according to the present invention.

[0017] The mobile terminal comprises an antenna 22, connected to transmitter/receiver (Tx/Rx) circuitry 24. It will be apparent to those skilled in the art that the mobile terminal 20 may equally have more than one antenna, with one or more Tx/Rx circuitry blocks. The Tx/Rx circuitry 24 is further connected to processing circuitry 26. Many parts of the mobile terminal 20 have been omitted for clarity, where they are not necessary for describing the present invention.

[0018] Thus, it is clear that the mobile terminal 20 is generally conventional in structure. However, its operation is not conventional, and will be described in greater detail below.

[0019] It has been observed that power control from neighbouring cells will limit the mobile terminal transmission power the most at the cell edge. That is, an overload indicator (OI), or similar, will in general have most effect on the mobile terminals near the cell edge, as these mobile terminals will cause the most interference. However, it is in such regions that certain control signalling, e.g. signalling such as buffer reporting and in particular handover signalling, is the most crucial.

[0020] If a handover is obstructed or delayed by the overload indicator the interference reduction from the handover (handover gain) is reduced. From a radio network performance point of view it is more important to be served by the best cell than to mitigate the interference from mobiles connected to the wrong cell. Thus, limiting

the UE transmission power will degrade the handover signalling robustness resulting in increased interference rather than reduced (i.e. due to lack of handovers) and also increased call drop rate.

[0021] Similarly, certain types of other control signalling from the mobiles to the radio base station, such as MAC control elements like buffer status reporting, RLC (radio link protocol) control signalling, PDCP (packet data convergence protocol) control signalling or RACH signalling, should be clearly signalled in order to improve efficiency by reducing retransmissions and shortening delay, and to avoid increased call drop rate.

[0022] Therefore, the present invention provides a method and arrangement that allow a mobile terminal to apply different power control mechanisms to signals transmitted over the same physical channel, such as the physical uplink shared channel (PUSCH), where the transmission power is derived depending on the type of content to be transmitted, for example control or data. The mechanism for deriving the transmission power either takes into account possible power control information from neighbouring cells (for one group of signals) or follows only the serving cell power control, i.e. disregards power control information from neighbouring cells and excludes certain control signalling from inter-cell power control (for other signals, including RRC signals, buffer reporting and handover signals, etc).

[0023] According to one embodiment of the present invention, said disregarding of power control information from neighbour cells implies ignoring an overload indicator provided by said neighbouring cells for purposes of mobile terminal power control. As mentioned previously, the overload indicator may be received indirectly from the neighbouring cell via the X2 or other interface, and thereafter the serving cell (as in E-UTRAN); or directly from the neighbouring cell (as relative grant in WCDMA). Other such power controlling information to be disregarded can relate to, e.g., the inter-cell interference co-ordination (ICIC).

[0024] Thus, Figure 3 is a flow chart illustrating a method in a mobile terminal according to embodiments of the present invention.

[0025] The method starts in step 100, and proceeds to step 102, where an overload indicator (OI) is received. As previously stated, this may be received from the serving radio base station, or the radio base station that is experiencing the interference. Further, the invention contemplates receiving notification of interference via ICIC, as mentioned above, or a relative grant from the radio base station experiencing the interference.

[0026] In step 104, the transmission power of the mobile terminal is adjusted according to the type of signal that is being transmitted, and in step 106 the method ends.

[0027] A first group of signals, for example including some or all of the RRC messages (e.g. buffer reporting, handover signals), and/or RACH signalling used for time alignment, is transmitted disregarding the interference

notification; a second group of signals are transmitted taking into account the interference notification. Thus, the first group of signals will in general be transmitted using a higher transmission power than the second group of signals.

[0028] In general, the mechanism disregarding power control information from neighbouring cells is advantageously applied by the mobile terminal for those control messages where it is of a greater importance that such messages reach the serving radio base station for achieving an overall improved network performance and reduced call drop rate than obeying neighbouring cell power control (i.e. indications of interference). The power control mechanism differs from ordinary power control by selecting a desired (or necessary) mobile terminal transmission power based on the radio situation in the serving cell only while ignoring neighbouring cell information so as to ensure that the control signalling indeed reaches the radio base station of the serving cell.

[0029] In this context, handover signals include, for example, handover measurement reports, handover triggering, handover command and handover completed.

[0030] The present invention can be applied in any of a number of different ways. For example, two sets of mobile terminal uplink power control rules can be defined and put into effect in the mobile terminal: one set of rules for RRC signals, etc, and another set of rules for other signals. Alternatively, a power offset may be defined and applied to those other signals, leaving the RRC signals, etc, unaffected by the OI. In a further embodiment, both sets of signals may be affected by the OI, to a greater or lesser extent. Thus, the transmission power for RRC signals, etc, may be reduced by a first amount, and the transmission power for other signals reduced by a second, greater amount.

[0031] In all of these embodiments, the transmission power rules or settings may be programmed into the mobile terminal, transmitted from the serving cell base station, or even transmitted from the base station that is experiencing interference.

[0032] There follow three examples in which the present invention can be utilized. However, it shall be understood that the invention is equally applicable to other situations, as described above.

[0033] E-UTRAN with UE co-ordinated inter-cell power control: Two sets of UE uplink power control rules are defined. One ordinary taking neighbouring cell information, e.g. the geometry and overload indicator information, into account. A second one that is used for handover-related uplink RRC messages. This second one follows the serving cell control only, pilot measure on serving cell and closed loop control from serving cell. Pilot measures on neighbouring cells and geometry measures are ignored as well as overload-indicators from neighbouring cells.

[0034] E-UTRAN with X2 co-ordinated inter-cell power control: Two uplink closed loop power control commands are standardized to be sent from the serving eNodeB to

the UE. One of said commands is for handover-related messages and one for scheduled data and other scheduled control (RRC) messages. This can be done as one serving cell power control level and an additional attenuation offset for inter-cell power control. When the eNodeB receives power constrain commands from a neighbour cell, the attenuation offset is sent to the UE. The UE applies an additional attenuation according to this offset on all uplink transmissions except on handover related messages.

[0035] EUL with RRC on scheduled shared channel: The RRC messages measurementReport and activeSetUpdateComplete are sent with a transport format ignoring relative grant from neighbouring cells.

[0036] It should be noted that the above-mentioned embodiments illustrate rather than limit the invention, and that those skilled in the art will be able to design many alternative embodiments without departing from the scope of the appended claims. The word "comprising" does not exclude the presence of elements or steps other than those listed in a claim, "a" or "an" does not exclude a plurality, and a single processor or other unit may fulfil the functions of several units recited in the claims. Any reference signs in the claims shall not be construed so as to limit their scope.

Claims

1. A user equipment for a telecommunications system, the telecommunications system comprising at least a first radio basestation, the user equipment comprising:

means for controlling a transmission power of the user equipment, such that said transmission power has a first value for a first set of one or more signals sent over a physical channel between the user equipment and the first radio basestation, and a second value for a second set of one or more signals sent over said physical channel between the user equipment and the first radio basestation, wherein said first value and said second value are different;
means for receiving an indication that one or more signals from the user equipment are interfering with a second radio basestation, wherein said transmission power is controlled based on said indication.

2. A user equipment as claimed in claim 1, wherein said second value is controlled based on said indication.

3. A user equipment for a telecommunications system, the telecommunications system comprising at least a first radio basestation and a second radio basestation, the user equipment comprising:

- means for receiving an indication that one or more signals from the user equipment are interfering with the second radio basestation;
 a first transmission control mechanism, for a first set of one or more signals sent over a physical channel between the user equipment and the first radio basestation, disregarding said indication; and
 a second transmission control mechanism, for a second set of one or more signals sent over the physical channel between the user equipment and the first radio basestation, taking into account said indication.
4. A user equipment as claimed in claim 3, said first transmission control mechanism being adapted to control a transmission power of the user equipment such that said transmission power has a first value for said first set of one or more signals, said second transmission control mechanism being adapted to control said transmission power of the user equipment such that said transmission power has a second value for said second set of one or more signals, wherein said first value and said second value are different.
 5. A user equipment as claimed in any one of claims 1, 2, and 4, wherein said first value is higher than said second value.
 6. A user equipment as claimed in any one of the preceding claims, wherein the first set of one or more signals comprises control signals.
 7. A user equipment as claimed in claim 6, wherein the first set of one or more signals comprises signals relating to handover from the first basestation to a second basestation.
 8. A user equipment as claimed in any one of the preceding claims, wherein the first set of one or more signals comprises signals reporting an amount of data in a buffer of said user equipment.
 9. A user equipment as claimed in any one of the preceding claims, wherein the second set of one or more signals comprises data signals.
 10. A user equipment as claimed in any one of claims 1-9, wherein said indication is received from the first basestation.
 11. A user equipment as claimed in any one of claims 1-9, wherein said indication is received from the second basestation.
 12. A method in a user equipment of a telecommunications system, the telecommunications system comprising

prising at least a first radio basestation, the method comprising:

controlling a transmission power of the user equipment, such that said transmission power has a first value for a first set of one or more signals sent over a physical channel between the user equipment and the first radio basestation, and a second value for a second set of one or more signals sent over said physical channel between the user equipment and the first radio basestation, wherein said first value is higher than said second value.

receiving an indication that one or more signals from the user equipment are interfering with a second radio basestation, wherein said transmission power is controlled based on said indication.

13. A method as claimed in claim 12, wherein said first value and said second value are controlled based on said indication.

Patentansprüche

1. Teilnehmereinrichtung für ein Telekommunikationssystem, wobei das Telekommunikationssystem mindestens eine erste Funkbasisstation umfasst, wobei die Teilnehmereinrichtung umfasst:

Mittel zum Steuern einer Übertragungsleistung der Teilnehmereinrichtung, so dass die Übertragungsleistung einen ersten Wert für eine erste Menge aus einem oder mehreren über einen physischen Kanal zwischen der Teilnehmereinrichtung und der ersten Funkbasisstation gesendeten Signalen und einen zweiten Wert für eine zweite Menge aus einem oder mehreren über den physischen Kanal zwischen der Teilnehmereinrichtung und der ersten Funkbasisstation gesendeten Signalen aufweist, wobei der erste Wert und der zweite Wert verschieden sind;

Mittel zum Empfangen einer Angabe, dass ein oder mehrere Signale von der Teilnehmereinrichtung eine zweite Funkbasisstation stören, wobei die Übertragungsleistung auf der Grundlage der Angabe gesteuert wird.

2. Teilnehmereinrichtung nach Anspruch 1, wobei der zweite Wert auf der Grundlage der Angabe gesteuert wird.
3. Teilnehmereinrichtung für ein Telekommunikationssystem, wobei das Telekommunikationssystem mindestens eine erste Funkbasisstation und eine zweite

Funkbasisstation umfasst, wobei die Teilnehmereinrichtung umfasst:

Mittel zum Empfangen einer Angabe, dass ein oder mehrere Signale von der Teilnehmereinrichtung die zweite Funkbasisstation stören; einen ersten Übertragungssteuerungsmechanismus für eine erste Menge aus einem oder mehreren über einen physischen Kanal zwischen der Teilnehmereinrichtung und der ersten Funkbasisstation gesendeten Signalen, der die Angabe nicht berücksichtigt; und einen zweiten Übertragungssteuerungsmechanismus für eine zweite Menge aus einem oder mehreren über den physischen Kanal zwischen der Teilnehmereinrichtung und der ersten Funkbasisstation gesendeten Signalen, der die Angabe berücksichtigt.

4. Teilnehmereinrichtung nach Anspruch 3, wobei der erste Übertragungssteuerungsmechanismus dafür eingerichtet ist, eine Übertragungsleistung der Teilnehmereinrichtung so zu steuern, dass die Übertragungsleistung einen ersten Wert für die erste Menge aus einem oder mehreren Signalen aufweist, wobei der zweite Übertragungssteuerungsmechanismus dafür eingerichtet ist, die Übertragungsleistung der Teilnehmereinrichtung so zu steuern, dass die Übertragungsleistung einen zweiten Wert für die zweite Menge aus einem oder mehreren Signalen aufweist, wobei der erste Wert und der zweite Wert verschieden sind.
5. Teilnehmereinrichtung nach einem der Ansprüche 1, 2 und 4, wobei der erste Wert höher als der zweite Wert ist.
6. Teilnehmereinrichtung nach einem der vorhergehenden Ansprüche, wobei die erste Menge aus einem oder mehreren Signalen Steuerungssignale umfasst.
7. Teilnehmereinrichtung nach Anspruch 6, wobei die erste Menge aus einem oder mehreren Signalen Signale bezüglich der Verbindungsübergabe von der ersten Basisstation zu einer zweiten Basisstation umfasst.
8. Teilnehmereinrichtung nach einem der vorhergehenden Ansprüche, wobei die erste Menge aus einem oder mehreren Signalen Signale umfasst, die eine Menge von Daten in einem Zwischenspeicher der Teilnehmereinrichtung melden.
9. Teilnehmereinrichtung nach einem der vorhergehenden Ansprüche, wobei die zweite Menge aus einem oder mehreren Signalen Datensignale umfasst.

10. Teilnehmereinrichtung nach einem der Ansprüche 1 bis 9, wobei die Angabe von der ersten Basisstation empfangen wird.

11. Teilnehmereinrichtung nach einem der Ansprüche 1 bis 9, wobei die Angabe von der zweiten Basisstation empfangen wird.

12. Verfahren in einer Teilnehmereinrichtung eines Telekommunikationssystems, wobei das Telekommunikationssystem mindestens eine erste Funkbasisstation umfasst, wobei das Verfahren umfasst:

Steuern einer Übertragungsleistung der Teilnehmereinrichtung, so dass die Übertragungsleistung einen ersten Wert für eine erste Menge aus einem oder mehreren über einen physischen Kanal zwischen der Teilnehmereinrichtung und der ersten Funkbasisstation gesendeten Signalen und einen zweiten Wert für eine zweite Menge aus einem oder mehreren über den physischen Kanal zwischen der Teilnehmereinrichtung und der ersten Funkbasisstation gesendeten Signalen aufweist, wobei der erste Wert höher als der zweite Wert ist;

Empfangen einer Angabe, dass ein oder mehrere Signale von der Teilnehmereinrichtung eine zweite Funkbasisstation stören, wobei die Übertragungsleistung auf der Grundlage der Angabe gesteuert wird.

13. Verfahren nach Anspruch 12, wobei der erste Wert und der zweite Wert auf der Grundlage der Angabe gesteuert werden.

Revendications

1. Équipement utilisateur pour système de télécommunication, le système de télécommunication comportant au moins une première station de base radio, l'équipement utilisateur comportant :

un moyen pour commander une puissance de transmission de l'équipement utilisateur, de sorte que ladite puissance de transmission présente une première valeur pour un premier ensemble d'un ou plusieurs signaux envoyés sur un canal physique entre l'équipement utilisateur et la première station de base radio, et une seconde valeur pour un second ensemble d'un ou plusieurs signaux envoyés sur ledit canal physique entre l'équipement utilisateur et la première station de base radio ;
dans lequel ladite première valeur et ladite seconde valeur sont différentes ;
un moyen pour recevoir une indication selon la-

- quelle un ou plusieurs signaux en provenance de l'équipement utilisateur occasionnent un brouillage avec une seconde station de base radio ;
dans lequel ladite puissance de transmission est commandée sur la base de ladite indication. 5
2. Équipement utilisateur selon la revendication 1, dans lequel ladite seconde valeur est commandée sur la base de ladite indication. 10
3. Équipement utilisateur d'un système de télécommunication, le système de télécommunication comportant au moins une première station de base radio et une seconde station de base radio, l'équipement utilisateur comportant :
- un moyen pour recevoir une indication selon laquelle un ou plusieurs signaux en provenance de l'équipement utilisateur occasionnent un brouillage avec la seconde station de base radio ;
un premier mécanisme de commande de transmission, pour un premier ensemble d'un ou plusieurs signaux envoyés sur un canal physique entre l'équipement utilisateur et la première station de base radio, lequel ignore ladite indication ; et
un second mécanisme de commande de transmission, pour un second ensemble d'un ou plusieurs signaux envoyés sur le canal physique entre l'équipement utilisateur et la première station de base radio, lequel tient compte de ladite indication. 20 25 30 35
4. Équipement utilisateur selon la revendication 3, dans lequel ledit premier mécanisme de commande de transmission est apte à commander une puissance de transmission de l'équipement utilisateur, de sorte que ladite puissance de transmission présente une première valeur pour ledit premier ensemble d'un ou plusieurs signaux, ledit second mécanisme de commande de transmission étant apte à commander ladite puissance de transmission de l'équipement utilisateur, de sorte que ladite puissance de transmission présente une seconde valeur pour ledit second ensemble d'un ou plusieurs signaux ;
dans lequel ladite première valeur et ladite seconde valeur sont différentes. 40 45 50
5. Équipement utilisateur selon l'une quelconque des revendications 1, 2 et 4, dans lequel ladite première valeur est supérieure à ladite seconde valeur.
6. Équipement utilisateur selon l'une quelconque des revendications précédentes, dans lequel le premier ensemble d'un ou plusieurs signaux comprend des signaux de commande. 55
7. Équipement utilisateur selon la revendication 6, dans lequel le premier ensemble d'un ou plusieurs signaux comprend des signaux connexes à un transfert de la première station de base à une seconde station de base.
8. Équipement utilisateur selon l'une quelconque des revendications précédentes, dans lequel le premier ensemble d'un ou plusieurs signaux comprend des signaux désignant une quantité de données dans une mémoire tampon dudit équipement utilisateur.
9. Équipement utilisateur selon l'une quelconque des revendications précédentes, dans lequel le second ensemble d'un ou plusieurs signaux comprend des signaux de données.
10. Équipement utilisateur selon l'une quelconque des revendications 1 à 9, dans lequel ladite indication est reçue à partir de la première station de base.
11. Équipement utilisateur selon l'une quelconque des revendications 1 à 9, dans lequel ladite indication est reçue à partir de la seconde station de base.
12. Procédé dans un équipement utilisateur d'un système de télécommunication, le système de télécommunication comportant au moins une première station de base radio, le procédé comportant les étapes ci-dessous consistant à :
- commander une puissance de transmission de l'équipement utilisateur, de sorte que ladite puissance de transmission présente une première valeur pour un premier ensemble d'un ou plusieurs signaux envoyés sur un canal physique entre l'équipement utilisateur et la première station de base radio, et une seconde valeur pour un second ensemble d'un ou plusieurs signaux envoyés sur ledit canal physique entre l'équipement utilisateur et la première station de base radio ;
dans lequel ladite première valeur est supérieure à ladite seconde valeur ;
recevoir une indication selon laquelle un ou plusieurs signaux en provenance de l'équipement utilisateur occasionnent un brouillage avec une seconde station de base radio ;
dans lequel ladite puissance de transmission est commandée sur la base de ladite indication.
13. Procédé selon la revendication 12, dans lequel ladite première valeur et ladite seconde valeur sont commandées sur la base de ladite indication.

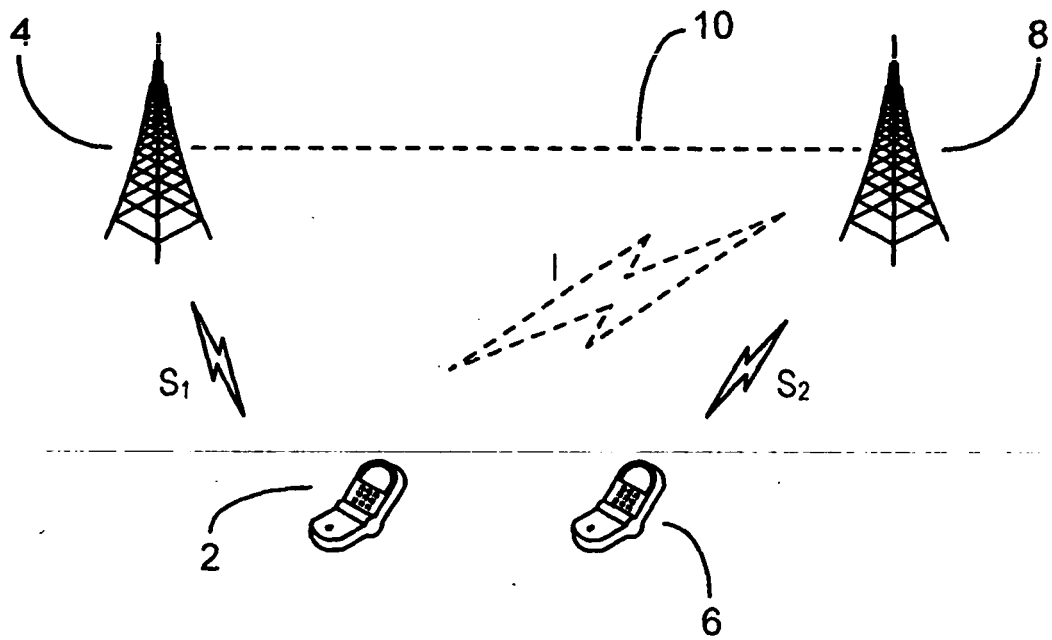


Figure 1

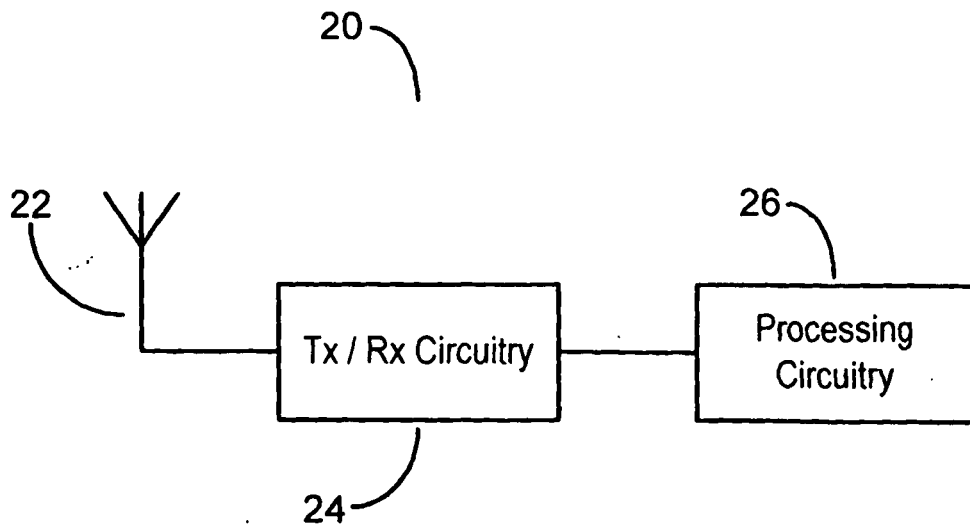


Figure 2

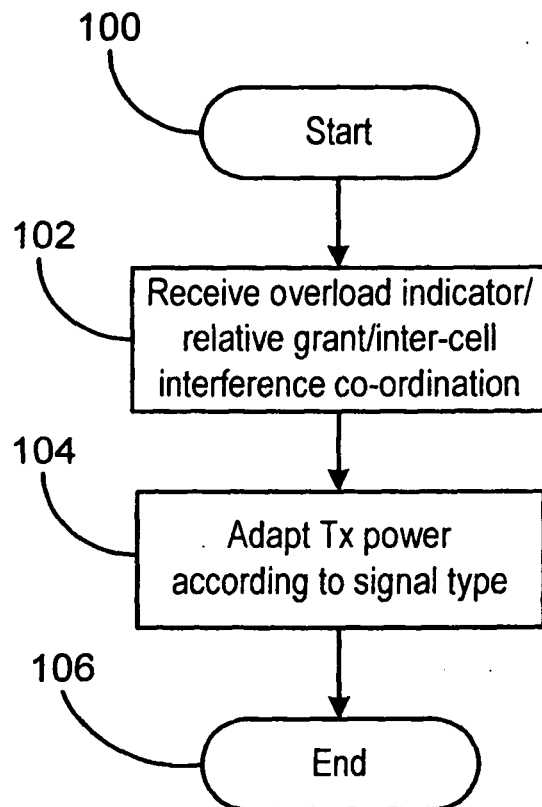


Figure 3

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 2005043051 A, Takano [0011]